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WASHINGTON, D. C.

WHITE (C.A.)

Acknowledged

MEMOIR

OF

GEORGE ENGELMANN, M. D.,

1809-1884.

BY

CHARLES A. WHITE.

EXTRACT FROM VOLUME IV.

BIOGRAPHICAL MEMOIRS NATIONAL ACADEMY OF  
SCIENCES.

To the Library of the  
U. S. Army Medical Museum.  
From the author

LIBRARY.  
SURGEON GENERAL'S OFFICE.

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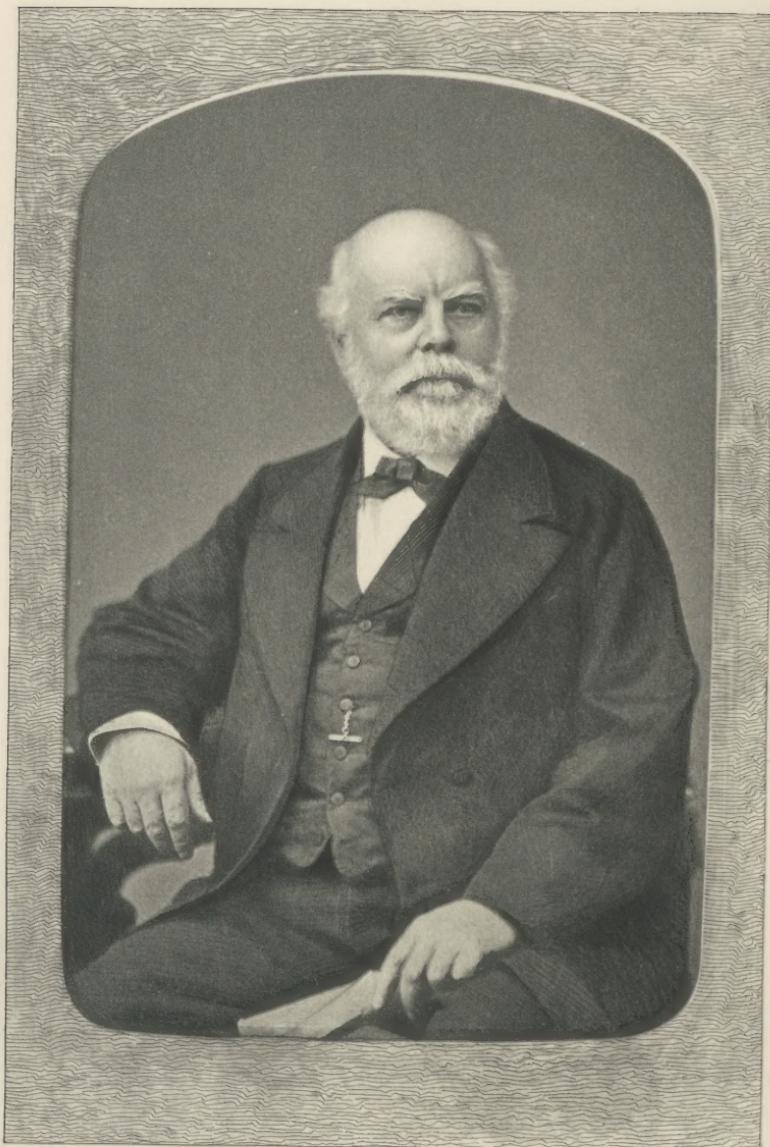
UNITED STATES NATIONAL MUSEUM

WASHINGTON

July 12, 1907.

Dear sir:

Herewith send for the  
Library of the U.S. Army Medical  
Museum a copy each of my memoirs  
of Dr. J. S. Newberry and Dr. George  
Engelmarn. Not long ago I pub-  
lished in the "Annals of Iowa", a  
magazine published by the Historical  
Department of the State Government of Iowa  
a similar memoir of Dr. Charles C. Parry.  
Not having any reprints I have written  
the editor of that magazine asking  
him to send to the Army Medical Museum,  
a copy of the magazine containing that memoir  
Very respectfully  
~~To the Librarian of the~~ Charles A. White  
~~U.S. Army Medical Museum.~~



J. Engelmann

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OF  
GEORGE ENGELMANN.

1809-1884.

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READ BEFORE THE NATIONAL ACADEMY, APRIL, 1896.  
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1896.



## BIOGRAPHICAL MEMOIR OF GEORGE ENGELMANN.

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*Mr. President and Members of the Academy :*

DR. GEORGE ENGELMANN was one of the founders of this Academy and was held in the highest esteem by all his associates. It was expected that his devoted friend and fellow-member, Dr. Asa Gray, would prepare his biographical memoir for our archives, but he, alas, also passed away before accomplishing it, and the performance of that duty was inadvertently delayed until it was assigned to me at our last stated meeting.

Because of the years that have passed since the death of Dr. Engelmann, and of the fact that most of his kindred and their family records are in a distant country, I expected more than the usual difficulty in obtaining direct and authentic biographical data. Fortunately, however, not long before his death he wrote out with his own hand a simple record of his life for his only son, Dr. George J. Engelmann. It is upon extracts from that peculiarly sacred family record that I have been permitted to base the biographical features of this memoir.\* Other memorabilia have been obtained from persons who had special relations with Dr. Engelmann or with the subject of his scientific work.

Dr. Engelmann was born in the old city of Frankfurt-on-the-Main, February 2, 1809, and died in St. Louis, Missouri, February 4, 1884, having just entered his 76th year. His father,

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\* Four memoirs of Dr. Engelmann and numerous kindly notices of his death have already been published, which necessarily contain many of the facts which I here record. Three of the memoirs referred to are in English and one in German. The latter was written by Mr. H. A. Rattermann for "Der Deutsche Pionier," a magazine published at Cincinnati. One was written by Dr. Asa Gray for vol. xix, Proc. Amer. Acad. Arts and Sciences, and republished in the great volume of the Shaw collection of Dr. Engelmann's works. One of the others was written by Dr. Enno Sander and published as an appendix to vol. iii, Trans. St. Louis Acad. Science. The other was published by Professor C. S. Sargent in vol. iii of "Science."

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Julius Bernhardt Engelmann, was a member of the Engelmann family from which for several successive generations were chosen ministers for the Reformed Church at Bacharach-on-the-Rhine. His mother, Julie Antoinette, was the only daughter of Antoinette André and George Oswald May, who in his earlier years was an artist of note at the Court of Weimar. She was descended from a family of those Huguenot émigrés who fled from the vicinity of Amiens immediately after the revocation of the edict of Nantes and settled at Offenbach, near Frankfort.

Thirteen children were born to Dr. Engelmann's parents, nine of whom reached maturity, and of whom he was the eldest. The father was a graduate of the University of Halle, and was also educated for the ministry, but he devoted his life to education, in the making of which choice he was influenced by his accomplished wife. He established at Frankfort a school for young ladies, such as were then little known, but which have since become an essential feature of female education in all enlightened countries. She was his coadjutor in that institution and its success was largely due to her management and tact. This excellent woman is affectionately remembered by her descendants as having possessed a charming disposition and a gentle but strong and vigorous character, and although the father was a worthy scion of a strongly intellectual family, George's character was largely inherited from and molded by his mother.

The education of George's earlier years was guided directly, and with great success, by his parents. As early as his fifteenth year he developed a lively interest in botany and began a systematic collection of the plants within his reach. At this early age, also, his disposition to study was such that he voluntarily devoted much of his time after the performance of his stated school duties to the study of history, modern languages, and drawing. His studies were thus prosecuted at the home of his parents until the completion of his eighteenth year, when, assisted by a scholarship founded by the "Reformed Congregation of Frankfort," he entered the University of Heidelberg, beginning his studies there in 1827.

The opportunities and stimulus for study afforded by this great university were eagerly improved, and they were happily enhanced by the congenial association of his fellow-students, among whom were Karl Schimper and Alexander Braun. With the

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latter especially an intimate friendship and correspondence were preserved unbroken until the death of Braun, in 1877. With Schimper also he retained friendship, although that penetrating but erratic genius after obtaining a remarkable grasp of philosophical botany and laying the foundations of phyllotaxy abandoned the subject entirely. Thus in an almost inexplicable manner he abandoned at its beginning a career of the highest promise, upon which he had entered with Braun and Agassiz and afterward Engelmann as companions.

In 1828 young Engelmann's studies at Heidelberg were interrupted by his having joined the students in a political demonstration. He thereupon left Heidelberg and entered Berlin University, where he remained two years. Thence he went to the University of Würzburg, where, in the summer of 1831, he took the degree of Doctor of Medicine. Although anticipating the order of events, it may be mentioned here that in 1882 that ancient university, *honoris et observantiae causa*, conferred upon him its quinquagintennial diploma for eminence in medicine, surgery, and obstetrics.

His inaugural dissertation for the medical degree, which, however, was not so directly related to medicine as to philosophical botany, was published at Frankfort in 1832 under the title of *De Antholysi Prodromus*. It is devoted to morphology—mainly to the structure of monstrosities and aberrant forms of plants—and is illustrated by five plates of figures drawn and transferred to the lithographic stone by the author's own hand. Although produced so early in his career, this treatise is still held to be one of the most philosophical of its kind. Its subject is so directly in line with that of the little treatise on the Metamorphosis of Plants by the renowned Goethe that it was heartily welcomed by the great poet-philosopher, whose own life was then approaching its close. Having received through his correspondent, Frau Marianne von Willemer, a copy of Engelmann's treatise, Goethe made earnest inquiry after the young author, saying that he had completely apprehended his ideas concerning vegetable morphology and had shown a peculiar genius for their development. So strong was his confidence in Engelmann's ability that he offered to place in the hands of that young botanist his whole store of unpublished notes and sketches.

Soon after Engelmann's return to his home in Frankfort with

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his degree of Doctor of Medicine he went to Paris to continue his medical and scientific studies, and remained there during the spring and summer of 1832. There he had Braun and Agassiz as companions, and they, as he says in the record before referred to, "led a glorious life in scientific union in spite of the cholera," which was then raging in Paris. At the close of his studies in Paris he found it necessary to form some plans for his settlement in life, and, wishing to visit America, he accepted a proposition from his uncles to become their agent for the purchase of lands in the United States.

A family of his relatives had already settled in Illinois, not far from St. Louis, and, sailing from Bremen for Baltimore in September, he joined them in the following winter, and immediately began the business entrusted to him by his uncles. For the purpose of forming a correct judgment of the lands of the new country to which he had come, he made many long, lonesome, and often adventurous horse-back journeys in Illinois, Missouri, and Arkansas. He often suffered sickness and hardship upon those journeys, but he persevered until he finished all the business he had planned to do. He made much use of his scientific, as well as practical, knowledge in the prosecution of that business, doing mineralogical and geological work, but only the botanical notes which he then made were used in his subsequent scientific career.

Having completed his business engagement, Dr. Engelmann decided to establish himself in the practice of medicine in St. Louis, which he did in the autumn of 1835. During the three years that had passed since he left his native land the slender means he brought with him became exhausted and he began the practice of his profession in absolute poverty. To furnish an office he was even obliged to part with his gun and with the faithful horse which had carried him on so many long and lonesome journeys. At that time St. Louis was little more than a frontier trading post, but Dr. Engelmann had strong faith in its future greatness, and he happily lived to see it become one of the chief cities of the nation.

Notwithstanding such an humble beginning, before four years were passed he had laid the foundation for a remarkably successful medical practice and had earned the means of making a visit to his old German home. The object of that journey was

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to claim the hand of his cousin, Dora Horstmann, who had been the sharer of his earlier studies as well as the stimulant to the utmost exertion for their mastery, and the hope of union with whom had been his solace during all his hardships in the new world. To her also his home-coming was the end of a long and anxious waiting, and they were married at Kreuznach on the 11th of June, 1840. This marriage was a most congenial one, and the sustaining and elevating influence of this true woman was exerted with marked effect upon the life and labors of Dr. Engelmann. It was not without pain that she left the home of her girlhood and that of her ancestors to go to a frontier town in a distant country, but she accepted with cheerfulness the frugal home her husband could offer her on the banks of the far-off Mississippi, and they sailed without delay.

Upon reaching New York, Dr. Engelmann for the first time met Dr. Asa Gray, already the most noted of American botanists, and the friendship between those two eminent men thus begun was broken only by death. This friendship is noteworthy because of the evidently beneficial effect which it had upon botanical science in America.

Upon his return to St. Louis with his young wife Dr. Engelmann immediately resumed his medical practice, and with renewed energy. Then, and long afterward, a large proportion of the inhabitants of St. Louis were of French and German-speaking families, and his familiarity with those languages, as well as with the English, gave him great advantage in extending his practice. Because of this and of his great professional ability, as the years went on he acquired a financial competence that gave him an independence of which he had little reason to hope in the years of his early struggles. Never, however, did he take advantage of his success in this respect to lessen his labors, for whenever his medical labors were relaxed his scientific work fully engrossed his attention.

The confidence which he inspired in his medical clientele was such that as he grew older he could take long vacations and resume his practice almost at will. Still, it was always difficult for him to refuse medical aid to those who sought it, and even up to the last year of his life there were old friends to whose families he was the only acceptable medical adviser and whose appeal for aid he could not refuse. Illustrating this fact, as well

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as the good doctor's energetic manner, his son relates the following incident: "It was a bitter, sleety winter night, when the ringing of the doorbell awoke me, and I heard an urgent call for father from the messenger of a patient. I would not arouse him, and proposed to go myself; but he had heard all, and, hurrying into his clothes, was ready to go in spite of my remonstrance 'What of the night?' he said, vexed at my interference, 'Am I already useless, to be cast aside? I would rather die in harness than rust out.' So I helped him down the icy steps, through the blinding sleet, into his carriage, and off on his mission of mercy."

He took several such vacations as I have referred to, but devoted them all to the gathering of data for his scientific work, the details of which were to be elaborated at his home. One of these vacations extended from 1856 to 1858, the greater part of the first summer having been spent in botanical work at the Harvard gardens and herbarium in companionship with his friend, Dr. Gray. Then, with his wife and young son, he visited his native land and other parts of Europe, occupying his time with scientific observation and study. In 1868 Dr. Engelmann and his wife again visited Europe for a year, the son being then in Berlin pursuing his medical studies. These visits to Europe were also the occasions of frequent and familiar personal interviews with men whose names will ever be well known to the scientific world, such as Sir Joseph Hooker, Alexander Braun, De Bary, Virchow, and others.

In the latter part of his life Dr. Engelmann had opportunities to explore large portions of his adopted country which he was unable to visit in his earlier years. In this way he was able to personally examine the living floras of the mountain region of North Carolina and Tennessee, the Lake Superior region, the Rocky Mountain region and the adjacent plains, and the Pacific Coast region. Upon those journeys, especially those in the western part of North America, he not only studied many plants that were then new to him, but he for the first time saw in the living condition plants that he himself had many years before described and named from dried specimens.

But the results of these later journeys, although very important, were only the aftermath of the great scientific harvest which he had previously gathered. The character of that harvest is

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shown in his published works, and remarks upon it will appear in quoted paragraphs on following pages. The manner in which it was accomplished was also remarkable, for much the greater part of his scientific work was done in the spare moments and occasional hours that he could take from an active and laborious medical practice.

While botanical investigations constituted much the greater part of Dr. Engelmann's scientific work, he always had in hand data for other investigations. For example, he began meteorological observations when he first settled at St. Louis, and personally, or by proxy during his absence, he continued them without intermission until his death—a longer period, it is believed, than that of similar observations by any one man in America. Furthermore, among the papers left at his death are voluminous and exhaustive notes upon various scientific subjects other than botany, besides copious extracts in his own handwriting from rare and valuable scientific books, all ready for use when required.

Although Dr. Engelmann never lost an iota of his inborn love and veneration for his fatherland, he was thoroughly American in all his feelings. He identified himself fully with American scientists and labored earnestly for the advancement of science in the country of his adoption. So widely had his fame extended and so highly was he esteemed by his American compeers that when it was proposed to establish our National Academy his name was one of the first to be enrolled among its founders.

He always took great pride in St. Louis, the city of his home, especially with regard to its scientific and educational interests, and he was liberal and active in their aid. He omitted no opportunity to encourage young men who manifested ability and inclination towards scientific pursuits, and many naturalists now living speak gratefully of the helping hand he was always ready to hold out to them. He was the originator of the movement to organize the St. Louis Academy of Science, and, naturally, became its first president. The membership of that academy showed their appreciation of his devotion to their interests by electing him sixteen times its president, his last election having taken place only a month before his death. He also took much interest in Washington University and delivered valuable lectures to its students on the natural sciences, not alone on botany.

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Dr. Engelmann was often consulted by his fellow-citizens upon subjects of public interest, especially with regard to educational matters, but the sound advice which he from time to time gave them was not always followed, because they were not prepared to adopt plans so comprehensive as his. Still an appreciation of his devotion to public interests was shown by leading citizens in various ways. For example, the State University of Missouri honored him with the degree of Doctor of Laws, and in the year following his death his name was given to the principal professorship in the Henry Shaw School of Botany, which was then established under the auspices of the Missouri Botanical Garden and of Washington University.

Another indication of appreciation occurred when, by the generosity of Mr. Shaw and the coöperation of competent men of science, all of Dr. Engelmann's published botanical works were collected and republished in one quarto volume of 508 pages and 103 full-page plates.\* Moreover, his entire herbarium, comprising 100,000 specimens, and all his library, including his notes and botanical sketches, are now in possession of the Missouri Botanical Garden, popularly known as the Shaw Garden. All this was the gift of Dr. George J. Engelmann, who, as he himself modestly says, sought to do what he believed his father would have wished.

These acts were really the final results of the profound influence which Dr. Engelmann had long exerted upon Mr. Henry Shaw, the founder of the Missouri Botanical Garden and School of Botany. A cordial friendship existed between them for many years, and it is well known that Dr. Engelmann's influence largely prevailed in shaping Mr. Shaw's plans for and the destiny of his public benefactions.

For well nigh forty years after Dr. Engelmann established himself with his young wife at St. Louis his life was unusually prosperous and free from the serious ills which fall to the lot of most men. His scientific compeers honored him, his patients gave him their unlimited confidence, his fellow-citizens recognized his sterling worth, his health was robust, and, above all, his domestic

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\* This volume bears the title, "The Botanical Works of George Engelmann, collected for Henry Shaw, Esq. Edited by William Trelease and Asa Gray. Cambridge, Mass. John Wilson & Son, University Press. 1887."

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relations were supremely happy; but the great grief of his life came upon him in the death of his faithful wife, which occurred on January 29, 1879. His grief was, if possible, intensified by the fact that their only son was then believed to be dying from the effects of blood poisoning by virus with which the young surgeon became infected during an operation in his special field of labor.

This blow broke the spirit of the devoted husband and father, and even his robust health gave way under the crushing calamity. He turned to his beloved plants, seeking relief in study; but life and a continuance of its labors seemed to be almost hopeless. His condition changed but little during the remainder of the winter, but when in the spring Professor Sargent came with the proposition that he should join him in a journey through the forests of the Pacific Coast region he accepted it. That journey, although a difficult one for a man of his age, was of great benefit to him physically. His shattered spirit also was much revived and, among his friends, he resumed and sustained his life-long habit of cheerfulness of manner. Professor Sargent's remarks upon the effects of that journey on Dr. Engelmann are given on following pages.

In 1883 his health was so far improved that, with his son and daughter-in-law, he revisited Europe, spent some time with his kindred, and pursued certain lines of botanical study. He was so much benefited by this voyage that upon his return home he resumed some of his unfinished studies and for a time carried them on with comfort and success. But he was not deceived as to the real condition of his health. He was aware that his end was not far off, and while upon his last voyage to Europe he told his son that he expected it to come at the same time and at the same age that it came to his devoted wife, who was a few years older than he. He was entirely free from morbid sensibility, but he often referred to her in connection with this anticipation of his own death, speaking of her as if she were ever near him. The end came as he had predicted. A slight aggravation of his bodily troubles suddenly terminated the life that had been so useful, so laborious, and so honorable.

His immediately fatal condition was brought on by his habitual devotion to duty. He took a cold while sweeping a path through the snow in his garden to his never-neglected thermometers. For

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a few days he struggled to continue his work, but the strong spirit was at length forced to yield, and on the evening of February 2, his seventy-sixth birthday, he laid aside his plants and papers and took to his bed. Two days later he died, as it were, in harness, as had been his wish. He died, literally, with his "house set in order." So methodical were his habits that the daily and monthly records of all his work were carried on to the last. His books were carefully balanced for January and his letters all recorded in due form, even to the last one, which was written to his friend, Dr. C. C. Parry, on the day he took to his bed.

His last publication pertained to his meteorological work and consisted of a full digest of the thermometrical part of his observations for forty-seven years. I have already mentioned that he did not expect to live through the winter of 1883-'84, and this presentiment is also indicated by his having summed up his meteorological work at that time instead of waiting for the completion of half a century, for in that summary he significantly remarks, "the task then would have been problematical of accomplishment." While he speaks apologetically for not having waited longer, he shows that the results could not have been appreciably different if the observations had been continued through three years more. He had placed the manuscript in the printer's hands and had himself revised the proof-sheets, but he did not live to see the work published, the separate copies of it having reached the house on the day after his death.

Dr. William Trelease, who was appointed to the Engelmann Professorship of Botany when it was first established, has taken great pains to preserve and arrange in the Herbarium building at the Shaw Garden everything which pertains to both the published and unpublished work of Dr. Engelmann. Professor Trelease writes me as follows concerning this material, and his statements incidentally throw much light on the extraordinary industry and thorough methods of the great botanist:

"It may not be generally known that Dr. Engelmann made much fuller notes on specimens that he studied than most workers do, but such was the fact. Taking up a specimen for study, in the intervals between professional calls, he invariably sketched its characteristic details and noted its peculiarities, using for this purpose the backs of prescription blanks, several pads of which were of course always at hand. These memoranda and

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sketches are also preserved at the Garden Herbarium. For various reasons they possess unusual value.

"After we had reprinted his published writings, Dr. Gray, well as he had known Dr. Engelmann's methods of study, expressed great surprise at the extent and number of those notes and sketches. When a few years ago I arranged, mounted, and bound them together, I was even more surprised to see the number of detailed observations thus recorded. They embrace the facts usually carried in one's mind during the progress of a piece of research and lost, except for the generalizations based upon them and contained in the printed results of the study. *Fully 20,000 slips of this sort are thus preserved, and, as now bound up, they constitute sixty quarto volumes, varying in thickness from two to four inches.*

"We have also been fortunate enough to secure the greater part, all that are to be found, of the tentative sketches and beautifully executed and precise drawings made by Paulus Roetter for much of Dr. Engelmann's earlier work, especially the originals of some of the fine plates of the Cactaceae of the Mexican Boundary Survey. All these are also preserved at the Shaw Garden Herbarium."

When one recovers from the surprise occasioned by this showing of Dr. Engelmann's industry, great gratification is felt that the material illustrating it has fallen into the careful hands of Professor Trelease. Besides the critical judgment of a scientist which he has exercised in the preservation of this material, he has shown a spirit of appreciative admiration for Dr. Engelmann and a desire that veneration for his name should be perpetuated.

What I have recorded on the preceding pages relates almost exclusively to Dr. Engelmann's personal history, but even so brief a memoir as this ought to contain a suitable discussion of the merits of his scientific work. It would be impossible for me to frame any words of my own which would be so descriptive and appreciative of the high character of that work as are those which his friend, Dr. Gray, has recorded. The following quoted paragraphs appear in his memoir of Dr. Engelmann, already referred to:

"Dr. Engelmann's associates and also all his published writings testify to his acuteness in observation, his indomitable perseverance in investigation, his critical judgment, and a rare openness of mind, which prompted him continually to revise his old con-

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clusions in the light of new facts or ideas. His earliest publication, 'De Antholysi Prodromus,' is a treatise on teratology and its relations to morphology. It is a remarkable production for the time and for a mere medical student with botanical predilections. There is an interesting analysis of it in 'Nature' for April 24, 1884, by Dr. Masters, the leading teratologist of our day, who compares it with Moquin-Tandon's more elaborate *Tératologie Végétale*, published ten years afterwards, and who declares that, 'when we compare the two works from a philosophical point of view and consider that the one was a mere college essay, while the other was the work of a professional botanist, we must admit that Engelmann's treatise, so far as it goes, affords evidence of deeper insight into the nature and causes of the deviations from the ordinary conformation of plants than does that of Moquin.'

"Transferred to the valley of the Mississippi and surrounded by plants, most of which still needed critical examination, Dr. Engelmann's avocation in botany and his mode of work were mapped out for him. Nothing escaped his attention; he drew with facility, and he methodically secured his observations by notes and sketches, available for his own use and for that of his correspondents. But the lasting impression which he has made upon North American botany is due to his habit of studying his subjects in their systematic relations and of devoting himself to a particular genus or group of plants, generally the more difficult, until he had elucidated it as completely as lay within his power. In this way all his work was made to tell effectively.

"Thus his first monograph was of the genus *Cuscuta*, published in the American Journal of Science in 1842, of which, when Dr. Engelmann took it up, we were supposed to have only one indigenous species, and that not peculiar to the United States; but he immediately brought it up to fourteen species without going west of the Mississippi valley. In the year 1849, after an investigation of the whole genus in the materials scattered through the principal herbaria of Europe and this country, he published in the first volume of the St. Louis Academy of Science a systematic arrangement of all the *Cuscutae*, characterizing seventy-seven species, besides others classed as perhaps varieties.

"Mentioning here only morphological subjects, we should next refer to his investigations of the Cactus family, upon which his

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work was the most extensive and important, as well as particularly efficient, and upon which Dr. Engelmann's authority is of the very highest. He, essentially for the first time, established the arrangement of these plants upon floral and carpological characters. This formidable work was begun in his sketch of Dr. Wislizenus' Expedition to Northern Mexico, in the latter's memoir of his tour, published by the United States Senate. It was followed up by his account, in the American Journal of Science, 1852, of the Giant Cactus of the Gila, *Cereus giganteus*, and allied species; by his synopsis of the Caetaceæ of the United States, published in the Proceedings of the American Academy of Arts and Sciences, 1856, and by his two illustrated memoirs upon the southern and western species, one contributed to the fourth volume of the series of Pacific Railroad Reports, the other to Emory's Report on the Mexican Boundary Survey. He had made large preparations for a greatly needed revision of at least the North American Caetaceæ, but although his collections and sketches will be indispensable to the future monographer, very much knowledge of this difficult group of plants is lost by his death.

"Upon two other peculiarly American groups of plants, very difficult of elucidation in herbarium specimens, *Yucca* and *Agave*, Dr. Engelmann may be said to have brought his work up to the time. Nothing of importance is yet to be added to what he modestly styles 'Notes on the Genus Yucca,' published in the third volume of the Transactions of the St. Louis Academy, 1873, and not much more to the 'Notes on Agave,' illustrated by photographs, included in the same volume, and published in 1875.

"Less difficult as respects the material to work upon, but well adapted for his painstaking, precise, and thorough handling, were such genera as *Juncus*, elaborately monographed in the second volume of the Transactions of the St. Louis Academy, and also exemplified in distributed sets of specimens; *Euphorbia*, in the fourth volume of the Pacific Railroad Reports and in the Botany of the Mexican Boundary Survey; *Sagittaria* and its allies, *Callictriche* and *Isoetes*, of which his final revision is probably ready for publication, and the North American Loranthaceæ, to which *Sparganium*, certain groups of *Gentiana*, and some other genera would have to be added to perfect any complete enumeration.

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Revisions of these genera were also kindly contributed to Dr. Gray's Manual, and he was an important collaborator in several of the memoirs of his surviving associate and friend.

" Of the highest interest and among the best specimens of Dr. Engelmann's botanical work are his various papers upon the American Oaks and Coniferae, published in the Transactions of the St. Louis Academy and elsewhere, the results of long continued and most conscientious study. The same must be said of his persevering study of the North American vines, of which he at length recognized and characterized a dozen species, excellent subjects for his nice discrimination and now becoming of no small importance to grape-growers, both in this country and Europe. Nearly all that we know scientifically of our species and forms of *Vitis* is directly due to Dr. Engelmann's investigations. His first separate publication upon them, 'The Grape Vines of Missouri,' was published in 1860. His last reëlaboration of the American species, with figures of their seeds, is in the third edition of the Bushberg Catalogue, published only a few months ago [1883].

" Imperfect as this mere sketch of Dr. Engelmann's botanical authorship must needs be, it may show how much may be done for science in a busy man's *horæ subsecivæ* and in his occasional vacations. Not very many of those who could devote their whole time to botany have accomplished as much. It need not be said, and yet perhaps it should not pass unrecorded, that Dr. Engelmann was appreciated by his fellow-botanists, both at home and abroad, and that his name is upon the rolls of most of the societies devoted to the investigation of nature; that he was everywhere the recognized authority in those departments of his favorite science which had interested him, and that, personally one of the most affable and kindly of men, he was as much beloved as respected by those who knew him.

" More than fifty years ago his oldest associates in this country, one of them his survivor, dedicated to him a monotypical genus of plants, a native of the plains over whose borders the young immigrant on his arrival wandered solitary and disheartened. Since then the name of Engelmann has by his own researches and authorship become unalterably associated with the Buffalo grass of the plains, the noblest conifers of the Rocky mountains, the most stately cactus in the world, and with most of the associated

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species, as well as with many other plants of which perhaps only the annals of botany may take account."

So deeply did the personal character of Dr. Engelmann impress those who knew him intimately that Dr. Gray, even in the foregoing critical sketch of his scientific work, could not omit the opportunity to speak tenderly of the friend who had performed it. A letter addressed to me by our associate, Professor C. S. Sargent, who knew Dr. Engelmann well, both professionally and personally, contains the following paragraphs, written in the same appreciative spirit:

"For several years previous to 1880 I had kept up a more or less active correspondence with Dr. Engelmann, but we had seldom met. In that year I was engaged in preparing the report on the forest wealth of the United States for the Tenth Census, and I asked him to join me in the journey to the Pacific coast. We traveled together in the summer of 1880 for about four months, covering the ground from Vancouver and the lower Frazer river to the Mexican boundary in southern Arizona.

"Dr. Engelmann was then rather infirm, crippled with rheumatism, and very stout. His energy, courage, and endurance were a surprise and delight to us. He never hesitated to try to get up the steepest mountains or to take long drives and rides. Generally he was badly used up at the end of a hard day, and would lie upon the ground in evident pain for an hour or two after supper, but he would rally and go to work to put up his plants of the day's collecting, working conscientiously over them for hours, sometimes when the rest of us were asleep.

"His characteristics as a traveler which struck me most forcibly were his pluck, good nature, good spirits, and good fellowship. He was always cheerful, always interesting, and always zealous. On slight acquaintance he appeared, perhaps, a little austere, but beneath this he was all good-natured jollity, and really one of the best companions I ever met. I look back upon that journey as the most interesting and profitable one I have ever made, and its success was due to Dr. Engelmann's energy, judgment, and common sense.

"As a botanist, no one who has worked in America has excelled him in patience and judgment, and no other American botanist has ever worked out harder problems or elucidated so many difficult groups of plants. All this is the more marvelous

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when it is remembered that botany was only his pastime. He was actively engaged all his life in professional duties as a physician, and his botany was all done at odd moments. In travelling, as at home, if he had a spare five minutes he would devote it to making a sketch or writing a note. A more industrious man never lived.

"My high estimate of Dr. Engelmann is only faintly indicated by these brief notes, but I shall always be glad to say or do anything in my power to keep green the memory of that excellent man to whom I feel deeply indebted."

Professor Sargent has improved several opportunities to honor the memory of Dr. Engelmann. Besides the memoir which he published in "Science," he dedicated to his friend volume II of his *Sylva* of North America, and he has added another brief sketch of his life on page 88, volume VIII of the same great work. In the memoir referred to Professor Sargent, like Dr. Gray, speaks lovingly of the prospect of enduring fame for Dr. Engelmann. He says with reference to future times: "The western plains will still be bright with the yellow rays of *Engelmannia*, and that splendid spruce, the fairest of them all, will still, it is to be hoped, cover with noble forests the highest slopes of the Rocky mountains, recalling to men, as long as the study of trees occupies their thoughts, the memory of a pure, upright, and laborious life."

Among the numerous notices of Dr. Engelmann's death which were published soon after the sad event is a peculiarly appreciative one by his friend, Dr. C. C. Parry, in volume IV of the Proceedings of the Davenport Academy of Sciences. He also was a member of Professor Sargent's party in its progress through the forests of the Pacific Coast region, and, like Professor Sargent, he regarded Dr. Engelmann's presence with them as a rare privilege. This feeling is indicated by the following remarks by Dr. Parry in the obituary notice just mentioned: "On this memorable occasion how deeply interesting to note the fresh light of manly vigor shining out of those experienced eyes as he looked for the first time upon scenes that he had so long thought over, gathering with his own hand the fruit of oak or pine that he had before only studied in the dried mummies of the herbarium! To watch the instructive processes by which he arrived at scientific results, to see the enthusiasm brightening up as he reached the solution of some deep botanical problem, was in itself

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a profound study and will ever remain a most cherished recollection."

Dr. Parry, like other friends of Dr. Engelmann, delighted to do him honor. While engaged in his earlier explorations he gave Dr. Engelmann's name to a peak of the Rocky mountains, and also to the picturesque cañon through which now passes the cog-wheel railroad from Manitou to the summit of Pike's peak, in Colorado.\*

The kindly phases of Dr. Engelmann's character which, as we have seen, his friends like to dwell upon were more or less apparent to all his acquaintances, but there was a special manner in which his gentle nature was manifested that was apparent only to his most intimate friends, because the sphere of that manifestation was wholly domestic. This matter has already been incidentally referred to, but, although of a private nature, it is well to make more explicit mention of it here because it relates to one of the most important features of his personal character—one which greatly influenced the more obvious acts of his life. I refer to his constant and loving devotion to his noble wife, amounting to an all-pervading passion, and to his intense solicitude for the advancement of their son in the medical profession. He held all other interests subordinate to these.

The excellent woman to whom he was so devoted was not only his faithful consort, but she was the able sharer of all his studies. To her all his discoveries were first announced and the written results of his investigations first read. He always sought her clear judgment and approval of what he had written before he sent it to the printer. It is gratifying to know that he lived to bestow his care upon her until the end of her life, to commend her memory in the most impressive manner to their son, and to see the latter a leader in the chosen branch of his profession.

The estimates of Dr. Engelmann's personal character which are recorded in the preceding paragraphs are those of persons who

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\*Gray's, Torrey's, and Engelmann's peaks are near one another, all three having been named at the same time by Dr. Parry (see Am. Jour. Sci., vol. xxxiii, 2d ser., p. 235). The names of Torrey's and Engelmann's peaks are often omitted from maps, even when the name of Gray's peak is retained; also, through faulty pronunciation and spelling, the name of the cañon mentioned above appears upon certain maps and in other publications as "Ingleman's cañon."

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knew him intimately and to whom his genial feelings were freely shown. I, who knew him less intimately, was impressed with the more conspicuous features of his character. It was evident to all that he was an eminently just man, always ready to accord to others their due, and that he held in abhorrence personal controversy and detraction. In his common intercourse with men, while free from all unkindliness of manner, he was always circumspect, often reticent, and always maintained the full dignity of superior manhood.

Noteworthy peculiarities of one's character are often revealed by his manner of speech. This was especially true of Dr. Engelmann. The language of his conversation and of his public addresses, like that of his writings, was clear and explicit. He affected no oratorical forms or verbal embellishments, but appealed directly to the intelligence of his auditors. He occasionally delivered lectures on scientific subjects when the interests of St. Louis or of its institutions could be thus promoted, but he never sought opportunities for public speaking, preferring to communicate his thoughts by the pen. His extemporey communications to the St. Louis Academy, however, were very numerous. These were usually short, always important, and always directly to the point under discussion, for life was too earnest and too full of labor for him to waste either time or words upon any occasion. While admiring his other qualities, I confess that I like to view his character in these more general aspects.

I cannot, however, refrain from adding my testimony to his geniality by relating the circumstances of my first interview with him, which occurred about twenty-five years before his death. I had built a skiff upon the upper Mississippi and was making a geological journey down the river. Arriving at St. Louis, I greatly desired to meet Dr. Engelmann, whose name was already well known to me, and, although I was weatherbeaten and without a suitable change of clothing, I ventured to call upon him at his office. I had framed excuses for myself, but immediately forgot them all in the cordial greeting he gave me. I needed no formal introduction. It was enough for him to know that I was a young naturalist seeking knowledge. Our interview was broken by a call for his professional services, but in the short time it lasted he said much, and his conversation was full of instruction to me. Beside this, his hearty German *Gemüthlichkeit* was so delightfully

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blended with the Westerner's freedom from conventional forms that the recollection of my interview has always brought me pleasure.

Dr. Engelmann's last resting place is in the beautiful grounds of Bellefontaine cemetery, in the northern suburb of St. Louis. It is situated in the central part of the cemetery, and is surrounded by small specimens of several of the Rocky Mountain conifers, the study of which was one of his chief pleasures. The grave is marked by a moderately heavy slab of bluish granitoid stone, the edges of which are gracefully moulded at the top and sides. The slab stands erect upon a plinth, and this in turn rests upon a basal block, all of the same kind of stone. The face of the slab bears the following inscriptions:

DORA,  
WIFE OF  
DR. GEORGE ENGELMANN,  
BORN IN BACHARACH,  
MAR. 10, 1804,  
DIED IN ST. LOUIS,  
JAN. 29, 1879.  
  
GEO. ENGELMANN M. D.  
FRANKFURT FEB. 2, 1809.  
ST. LOUIS, FEB. 4, 1884.

In the preparation of biographical memoirs for the Academy it has become customary to append a list of the published writings of the deceased member. In this case, however, I do not think it necessary, because nearly all of Dr. Engelmann's publications were botanical, and all these have been republished in one large quarto volume, the title of which is given in a foot-note on a preceding page. With few or no exceptions, all his other published scientific writings and discussions are to be found in the three first volumes of the Transactions of the St. Louis Academy of Science. The large volume referred to gives full bibliographical references to the places of original publication of the parts of which it is composed. Besides this, a list of Dr. Engelmann's published works was prepared by Professor Sargent for Professor Coulter's Botanical Gazette, volume ix, pages 69 to 74, inclusive. This list was republished, with some additions, in "Der Deutsche Pionier" by Mr. H. A. Rattermann, in connection with his memoir of Dr. Engelmann already referred to.









